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Title: Integrated Microfluidic Device for Real-Time: Reservoir Fluid Analysis

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Integrated Microfluidic Device for Real-Time Reservoir Fluid Analysis

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BACKGROUND & MOTIVATION

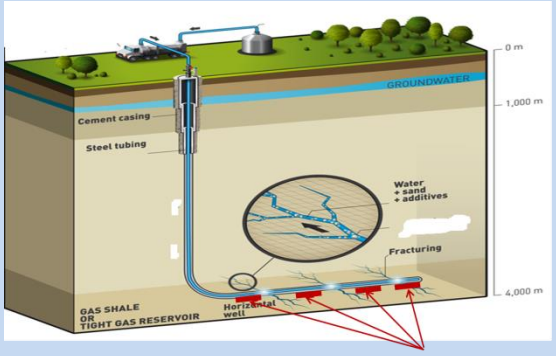
Current methods of reservoir fluid chemical analysis and monitoring have many issues including time consuming, expensive, inadequate data collection, time lapse, difficulty in sample preservation and transport.

Fluid sampling

Lab analysis

INNOVATION

An integrated multi-channel array microfluidic device with optical spectroscopy and electrochemical sensors.

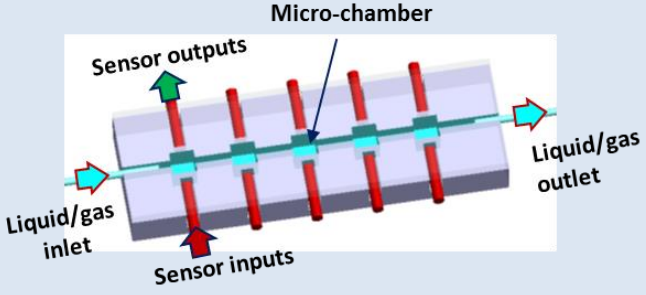


Micro devices for reservoir fluid analysis

DESCRIPTION

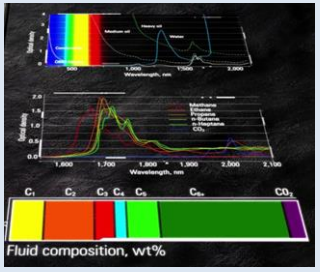
A microfluidic device with integrated optical spectroscopy for chemical analysis and electrochemical sensors for pH and salinity measurements of in-situ reservoir fluids.

How it works:



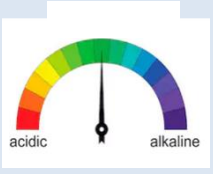
Chemical analysis

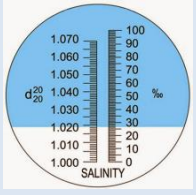
Optical spectroscopy UV, Vis, IR, and Raman



Electrochemical sensors

pH and salinity measurements





TRL 3: Microfluidic chip platform has been fabricated and tested in subsurface engineering applications.

ANTICIPATED IMPACT

Real time reservoir fluid analysis will improve reservoir management and production optimization

PATH FORWARD

- Fabricate integrated device prototype
- Lab testing of prototype
- Field testing of prototype
- Build and test commercial devices

Potential End Users:

- Oil and gas companies

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